

**REMARKS**

Claims 7-18 are pending in this application, claims 7-16 having been withdrawn from consideration. By this Amendment, claims 17 and 18 are amended and claims 19-21 are canceled without prejudice to or disclaimer of the subject matter therein. Claim 17 is amended to further distinguish over the references cited in the Office Action. Claims 17 and 18 are also amended to clarify the language therein.

No new matter is added to the application by this Amendment. Support for the language added to claims 17 and 18 can be found within claims 20 and 21, in FIG. 1 and in the specification at paragraphs [0006], [0007], [0019], [0020] and [0029].

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration as the amendments merely incorporate previously considered limitations into the independent claims; (c) satisfy a requirement of form asserted in the previous Office Action; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments and reconsideration of the application are thus respectfully requested.

**I. Rejection Under 35 U.S.C. §112**

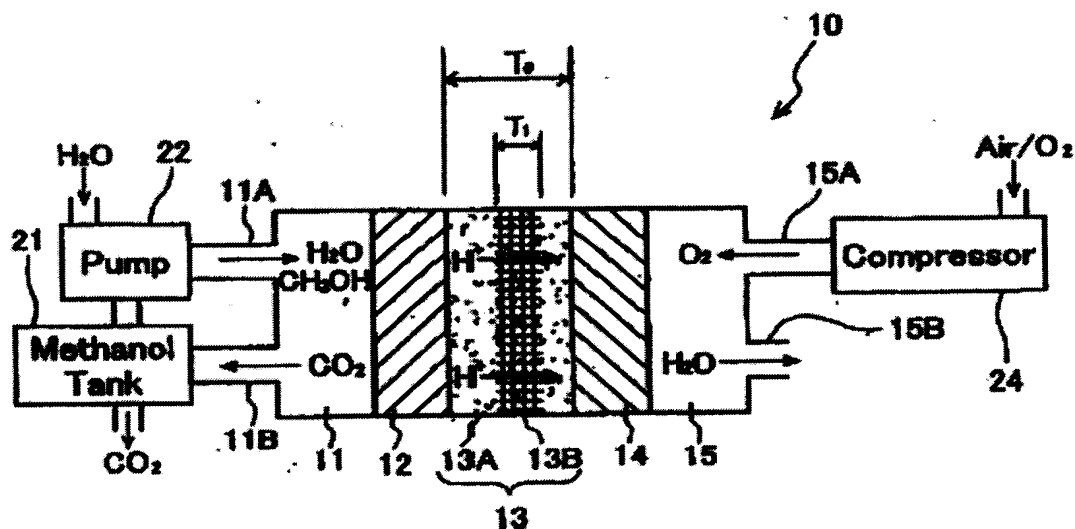
Claims 17-21 were rejected under 35 U.S.C. §112, second paragraph, for allegedly being indefinite. This rejection is respectfully traversed.

First, claims 19-21 are canceled by the present amendment.

Second, claim 17, as amended, recites that the size of the opening of the glass cloth has a lower limit of 20  $\mu\text{m}$ . Claim 18, as amended, recites that the width of each of the plurality of glass yarns has a lower limit of 10  $\mu\text{m}$ . Applicants submit that amended claims

17 and 18 identify a particular unit for each of the numerical values recited therein as suggested by the Patent Office.

Claim 17 is amended to include the claim language "a thickness of a portion of the polymer matrix that has the sheet embedded therein is between 30% and 80% of the entire thickness of the matrix." Applicants submit that paragraph [0029] of the application states that "preferably, the thickness of the sheet 13B is less than the thickness of the polymer matrix 13A and almost all of the thickness of the sheet 13B is lodged (embedded) in the polymer matrix 13A." The drawing, shown herein, is a copy of FIG. 1 from the application, as originally filed, with the external circuit omitted and dimensional lines added. As illustrated in the drawing, dimensional lines  $T_0$  define "the entire thickness of the matrix" and dimensional lines  $T_1$  define "a thickness of a portion of the matrix that has the sheet embedded therein," as referred to in the claim language "a thickness of a portion of the matrix that has the sheet embedded therein is between 30% and 80% of the entire thickness of the matrix."



Applicants submit that the thickness of the portion of the matrix that has the sheet 13B embedded therein (see  $T_1$  in the drawing) is less than the entire matrix 13A (see  $T_0$  in the drawing) because the sheet 13B is located within the matrix 13A as shown in the drawing.

Therefore, Applicants submit that the claim language recited in amended claim 17 is not indefinite in view of FIG. 1 and paragraphs [0019] and [0029] of the specification.

Thus, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

**II. Rejection Under 35 U.S.C. §103(a)**

Claims 17-20 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,042,958 to Denton et al. in view of U.S. Patent No. 6,437,011 to Steck et al. The rejection is respectfully traversed.

First, canceled claim 21 was not rejected by the Patent Office in view of the applied references. Applicants have amended claim 17 to incorporate the subject matter of claim 21 into independent claim 17. Thus, Applicants submit that amended claim 17 is also allowable over the applied references.

Second, Applicants submit that neither Denton et al. nor Steck et al., taken singly or in combination, teaches or suggests an electrolyte membrane which is intended for use in a fuel cell having an entire sheet that is implanted in the polymer matrix and a thickness of a portion of the matrix that has the sheet embedded therein is between 30% and 80% of the entire thickness of the matrix as recited in claim 17.

Furthermore, Applicants submit that an electrolyte membrane with the required structure of claim 17 allows a fuel cell to be constructed having a structure in which "the portion of the electrolyte member 13 touching the anode 12 and the cathode 14 (i.e., the surface of the electrolyte member 13) is substantially constituted of the polymer matrix 13A," as shown in FIG. 1 and discussed in paragraph [0029] of the specification. A fuel cell having this structure has excellent conductivity between the electrolyte membrane and the electrodes.

Additionally, according to an electrolyte membrane having the structure as specifically defined in claim 17, the glass cloth is specifically constructed to be embedded in

the electrolyte membrane. With such a structure, it is possible to "maintain the construction of the polymer matrix (i.e., the polymer construction) even under high temperatures" and "exhibit excellent resistance to fuel permeation (typically, resistance to methanol crossover) even when operated at high temperatures," as described in paragraph [0031] of the specification. Having the specific structure as recited in claim 17, the glass cloth of the electrolyte membrane of the present claims exhibits an improved effect of maintaining the structure of the polymer matrix, as compared with the porous substrate taught in Steck et al. and/or the randomly oriented individual fibers disclosed in Denton et al.

Denton et al. and/or Steck et al. fail to teach or suggest an electrolyte membrane using a glass cloth having a specific structure in which the glass cloth is embedded in a part of the electrolyte membrane in a thickness direction. As a result, the surface of the electrolyte membrane is formed from a polymer matrix as shown in FIG. 1 of the present application. Thus, Applicants submit that Denton et al. and Steck et al., taken singly or in combination, fail to teach or suggest an electrolyte membrane which is intended for use in a fuel cell having an entire sheet that is implanted in the polymer matrix and a thickness of a portion of the matrix that has the sheet embedded therein that is between 30% and 80% of the entire thickness of the matrix as required in claim 17.

Because these features of independent claim 17 are not taught or suggested by Denton et al. and Steck et al., taken singly or in combination, Denton et al. and/or Steck et al. would not have rendered the features of claim 17 obvious to one of ordinary skill in the art.

For at least these reasons, claims 17 and 18 are patentable over the applied references. Thus, withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

### **III. Rejoinder**

Applicants further respectfully submit that, because claims 17 and 18 are in condition for allowance for the reasons set forth above, claims 7-16 should be rejoined and considered

on the merits at this time. Thus, withdrawal of the Restriction Requirement and rejoinder of claims 7-16 are respectfully requested.

**IV. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 7-18 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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